SPACEFLIGHT

Volume XIII
1971

Editor: K. W. GATLAND, F.R.A.S., F.B.I.S.

Published by the British Interplanetary Society
12, Bessborough Gardens, London, SW1V 2JJ.

MAIN ARTICLES

Baker, D. Apollo 14: A Visit to Fra Mauro . . . 121, 164, 210, 373
" " 15: Expedition to Hadley Apennine . . . 358, 431, 468
" Lunar Roving Vehicle: Design Report . . . 234
" NASA Budget . . . 368
" NASA Explores the Solar System . . . 42
" Orbital Bases . . . 318, 344
" Orbiters to Mars . . . 187
" Saturn V . . . 16, 61, 100
" Schedule for the Shuttle . . . 454
" Skylab . . . 335
" Telecommunications Aboard Apollo . . . 229
" X15 in Retrospect . . . 216
Bazykin, V. Moscow's Permanent Space Exhibition . . . 295
Bond, A. Problems of Interstellar Propulsion . . . 245
Cappellari, J. O. et al. Telescopic Observations of Lunar Missions . . . 363
Cleaver, A. V. The 4th European Space Conference . . . 108
Collins, G. W. Questions & Answers on Rocket Technology . . . 148, 179, 293, 466
Cross, C. A. Mapping the Surface of Mars . . . 402
Davies, J. E. Preliminary Examination of the Apollo 12 Lunar Samples . . . 24
" The Apollo Seismic Experiments . . . 370
Dooling, D. The Manned Exploration of Mars . . . 198
" New Industrial Revolution in Space . . . 442
Ehricke, K. A. Our Commitment to Space . . . 82
Elliott, W. A. Some Comments on 'The Phenomenon of Time Dilation' . . . 86
Falworth, G. Objects in Heliocentric Orbit . . . 298
" Satellite Digests . . . 15, 56, 94, 138, 172, 213, 257, 287, 386, 355, 428, 456
Gatland, K. W. Moon Sampling by Automation . . . 2
" The Space Shuttle . . . 158
" Salyut . . . 338
Goodwin, P. International Moon Conference . . . 282
Griffith, J. S. Astronomical Notebook . . . 66, 111, 146, 263, 300, 391, 471
Henderickx, H. A Modularized Space Station . . . 341
Hendrie, M. J. A Digest of Comets . . . 140
Hooke, A.A.J. The 1971 Mariner Mars Spacecraft . . . 408
Lawton, A. T. Infra Red Interstellar Communication . . . 83
" Startalk. The Problems of Interstellar Communication . . . 241
Maluquer, J. J. Rocketry & Astronautics in Spain . . . 382
Mama, H. P. India's Domestic Communications Satellite . . . 446
" The Ooty Radio Telescope . . . 58
Markham, P. De L. The Canadian Scientific Sounding Rocket Programme . . . 227
Millburn, J. R. A Demonstration Model for Near Polar Orbits . . . 74
" Earth/Mars Orbit Demonstrations . . . 259
" Kepler's Laws & The Mars Orbiters . . . 422
Molton, P. M. Sir William Congreve:Rocket Pioneer . . . 23
" The Protection of Astronauts Against Solar Flares . . . 220
Parker, P. J. 'Grand Tour' Spacecraft Computer . . . 88
" Lunar Research & Exhibition . . . 154
Phillips, K. J. H. The Mullard Space Science Laboratory . . . 97
Plummer, K. L. 1970: A Soviet Space Year . . . 175
Ransome, T. Periodic Interplanetary Orbits . . . 72
Siegel, S. M. Experimental Biology of Extreme Environments & its Significance for Space Bioscience . . . 183
Simmons, H. Harvest from Space . . . 442
Simmons, N. The British National Space Programme . . . 6
Strong, J. Trans-Stellar Navigation . . . 252
Tarzwell, J. A. Canadian Launch Facilities . . . 225
Turner, C. R. The 4th Eurospace US-European Conference . . . 193

FEATURES

B.I.S. News 33, 115, 151, 271, 389, 393, 435, 473
Conference Reports: Advances In Space Research & Technology 78
" " Applications Satellites 305
Correspondence 119, 149, 232, 240, 313, 399, 477
Film Reviews 34, 118, 156, 309
Future of Space Transportation 268
International Astronautical Congress. 21st. 265
Mission to Hadley Apennine 45
Personal Profiles 47, 181, 184
Reviews (See separate index)
Rockets of Bristol Aerojet 30
Sert 2 Report 168
Space Report (See separate index)
Towards East-West Space Co-operation 278

SPACE REPORT

Aerosat Contract 356
Airborne Space Research 284
Apollo
- 13 136
- 14 . . . . . 12, 53, 139
- 16 . . . . . 258, 376

Astronauts 354, 377
ATS 53, 135, 170, 204
Biosatellite 459
Canadian-US Agreement 354, 380
Communications Satellites 130, 208, 377
Cosmos 203
Earth Observations Satellites 13, 136, 203, 258
Einstein Test 132
Epass 92
ERTS 137
ESRANGE 385
Europa 11 Test at Kourou 286
European Space Conference 89
Extraterrestrial Life 131, 464
Fra Mauro Samples 426
Frogs
- In Space 93
- Balancing Mechanism 170

Gravity 459
Gum Nebula 207
Hadley Base 378
Implantation of Biomedical Sensors 427, 464
Intelsat 15, 353
Luna
- 16 54
- 18 462

Lunokhod 1 . . . . . 90, 128, 204
Mariner Mars Plan 352
Mars 203, 352
Monopropellent Gas Generator 286
Moon
- Magnetic Field 139
- Quakes 458
- Vehicles on 138
- Water on 134, 139

NASA Advisory Council 284
Navigation Satellite 207
Nerva 462
Nimbus 52
Origin of Life 458
OSO 462
Peole 140
Radio Telescope 462
Rockets
- Fuel from Waste 206
- Versatile Upper Stage 14

Rover 133
Salyut 255, 461
Shuttle 52, 138, 206, 381, 426
Skylab 52,96, 130, 136, 206, 460
Skynet Terminals Afloat 286
Snap 92
Soviet
- Moon Treaty Proposal 427
- Rocket Engine Designer 427
- Space Book 286

Space
- Clock 461
- Shuttle Engine 426

Spin-Off 132, 137, 381
Titan 111-C Guidance System 170
UK - 5 131
US - Soviet Space Talks 92
Viking 14
X - 24A 427
X-Ray Star 285

REVIEWS

Agel, J. The Making of Kubrick's 2001 40
Barbour, J. Footprints on the Moon 476
Brock, G. C. Image Evaluation for Aerial Photography 396
Burbridge, G.& M. Quasi-Stellar Objects 275
Clarke, A. C. Profiles of the Future 40
Detre, L. Non-Periodic Phenomena in Variable Stars 38
Farmer, G. et al. First on the Moon 39
Fitzgerald, K. Space Age Photographic Atlas 311
Ford, B. German Secret Weapons 311
Gargarin, Y. Psychology & Space 475
Gingerich, O. et al. Frontiers in Astronomy 312
Glasby, J. The Dwarf Novae 311
Goddard & Pendray. The Papers of Robert H. Goddard 1898-1945 274
Hewish, A. Seeing Beyond the Visible 312
Hong-Yee Chiu. et al. Stellar Astronomy 38
Houston-Lay, S. et al. The Law Relating to Activities of Man in Space 276
I.A.U. The Spiral Structure of our Galaxy 398
Knight, D. C. American Astronauts & Spacecraft 276
Konarski, M. M. Russian-English Space Technology Dictionary 40
Kosoksky, L. J. et al. The Moon as viewed by Lunar Orbiter 38
Langton, N. H. Rocket Propulsion 36
Linlor, W. I. Electromagnetic Exploration of the Moon 476
Macvey, J. W. How we will reach the Stars 36
Marder, L. Time & The Space Traveller 396
Messel, H. et al. Pioneering in Outer Space 395
M.I.T. Press. Smithsonian Astrophysical Observatory Star Atlas of Reference Stars & Nonstellar objects 39
Moore, P. Astronomy for O-Level 395
" Atlas of the Universe 475
Morando, B. Dynamics of Satellites 1969 475
NASA Astronautics & Aeronautics 1968 35
Nicolson, I. Exploring the Planets 273
O'Leary, B. The Making of an Ex-Astronaut 397
Page, T. & L. W. The Evolution of Stars 312
Pecker, J. C. Experimental Astronomy 276, 474
" Space Observatory 476
Pelrovich, G. V. A-Z The Soviet Encyclopaedia of Space Flight 37
Perel'man, R. G. Goals & Means in the Conquest of Space 473
Pergamon Press. 19th I.A.F. Congress 273
Roth, G. Handbook for Planet Observers 37
Segal, C. L. et al. Polymers in Space Research 273
Turnhill, R. The Language of Space – A Dictionary of Astronautics 275
Wahl, J. J. Conquista De La Luna 396
Ward, B. A Funny Thing Happened on the way to the Moon 35
Wentzel, D. G. et al. Plasma Instabilities in Astrophysics 39